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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,648	01/29/2004	James A. Hoxie	53893-5046	6515

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EXAMINER	
BOESEN, AGNIESZKA	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/767,648	HOXIE ET AL.	
	Examiner	Art Unit	
	Agnieszka Boesen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2006*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-72* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's letter, filed 3/17/2006, regarding the appointment of new attorney is acknowledged. Claims 1-72 are pending and are subject to the following restriction.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-16, drawn to an isolated **nucleic acid** encoding a mammalian immunodeficiency virus glycoprotein (gp) 120 polypeptide, classified in class 536, subclass 23.1.

II. Claims 17-22, drawn to an isolated **nucleic acid** encoding a mammalian immunodeficiency virus gp41 polypeptide, classified in class 536, subclass 23.1.

III. Claims 23-35, 41, 68 and 69, drawn to an isolated mammalian immunodeficiency virus gp120 **polypeptide**, classified in class 530, subclass 350.

IV. Claims 36-40, drawn to an isolated mammalian immunodeficiency virus gp41 **polypeptide**, classified in class 530, subclass 350.

V. Claims 42-47 and 72, drawn to a composition comprising gp120 and gp41 **polypeptides**, classified in claim 530, subclass 350.

VI. Claims 48-50, 52 and 53, drawn to an isolated mammalian immunodeficiency **virus** comprising a gp120 polypeptide, classified in class 424, subclass 208.1.

VII. Claims 51, 54, and 65, drawn to an isolated mammalian immunodeficiency **virus** comprising a gp120 polypeptide and gp41 polypeptide, classified in class 424, subclass 208.1.

VIII. Claims 55, 56, 70 and 71, drawn to an isolated mammalian immunodeficiency **virus Env**, classified in class 530, subclass 350.

IX. Claims 57-59, drawn to a **method of producing a neutralizing antibody** in a mammal, comprising administering to a mammal an immunogenic amount of an isolated gp120, classified in class 435, subclass 69.6.

X. Claims 60 and 61, drawn to a **method of producing a neutralizing antibody** in a mammal, comprising administering to a mammal an immunogenic amount of an isolated gp120 and gp41, classified in class 435, subclass 69.6.

XI. Claim 62, drawn to an **antibody** produced by administering a gp120 and gp41 polypeptide to a mammal, classified in class 424, subclass 130.1.

XII. Claim 63, drawn to an **antibody** produced by administering a gp120 polypeptide to a mammal, classified in class 424, subclass 130.1.

XIII. Claim 64, drawn to a **method of producing a replication-competent mammalian immunodeficiency virus**, classified in class 435, subclass 5.

XIV. Claim 66, drawn to a **method of identifying a determinant of a chemokine receptor** that specifically binds with a gp120 polypeptide of a mammalian immunodeficiency virus, classified in class 435, subclass 339.1.

XV. Claim 67, drawn to a **method of identifying a compound that inhibits binding of a mammalian immunodeficiency virus gp120 polypeptide with a chemokine receptor**, classified in class 435, subclass 5.

If group (I, II) or (III, IV, V, VIII) is elected the Applicant is further required to elect **one mammalian immunodeficiency virus,** classified in class 424, subclass 208.1.

:

A) simian immunodeficiency virus (SIV)
B) human immunodeficiency virus type 1 (HIV-1)
C) human immunodeficiency virus type 2 (HIV-2)

If group (I, II) or (III, IV, V, VIII) is elected the Applicant is further required to elect **one deletion,** classified in class 424, subclass 205.1.

D) deletion of V3 region (ΔV3 (6,6))
E) deletion of V3 region (ΔV3 (1,1))
F) deletion of the V1/V2 region

If Group I is elected the Applicant is further required to elect **one mutation** from the list of mutations in claims 7-11, and 20-22, classified in class 424, subclass 205.1.

If group (I, II), (III, IV, V, VIII), (VI, VII) or (IX, X) is elected the Applicant is further required to elect **one nucleic acid or amino acid sequence**:

G) SEQ ID NO: 5
H) SEQ ID NO: 6
I) SEQ ID NO: 8
J) SEQ ID NO: 9
K) SEQ ID NO: 10
L) SEQ ID NO: 11
M) SEQ ID NO: 12

N) SEQ ID NO: 14

O) SEQ ID NO: 15

P) SEQ ID NO: 17

Q) SEQ ID NO: 16

R) SEQ ID NO: 18

S) SEQ ID NO: 20

T) SEQ ID NO: 21

U) SEQ ID NO: 22

W) SEQ ID NO: 23

X) SEQ ID NO: 24

Y) SEQ ID NO: 26

Z) SEQ ID NO: 27

AA) SEQ ID NO: 28

BB) SEQ ID NO: 29

CC) SEQ ID NO: 30

3. The inventions are distinct, each from the other because of the following reasons:

The polypeptides of group (III, IV, V, VIII) and isolated nucleic acid of group (I, II) are patentably distinct inventions for the following reasons. Polypeptides, which are composed of amino acids, and polynucleotides, which are composed of purine and pyrimidine units, are structurally distinct molecules; any relationship between a polynucleotide and polypeptide is dependent upon the information provided by the nucleic acid sequence open reading frame as it corresponds to the primary amino acid sequence of the encoded polypeptide. In the present claims, a polynucleotide of group (I, II) does not necessarily encode a polypeptide of group (III, IV, V, VIII). For example, as disclosed in the specification, SEQ ID NO: 5 is 501 amino acids in length, whereas the nucleic acid molecule of SEQ ID NO: 15 requires only 717 nucleotides

(which would encode at most a polypeptide of 235 amino acids in length). Furthermore, the information provided by the polynucleotide of group (I, II) can be used to make a materially different polypeptide than that of group (III, IV, V, VIII). In addition, while a polypeptide of group (III, IV, V, VIII) can made by methods using some, but not all, of the polynucleotides that fall within the scope of group (I, II), it can also be recovered from a natural source using by biochemical means. For instance, the polypeptide can be isolated using affinity chromatography. For these reasons, the inventions of groups (I, II) and (III, IV, V, VIII) are patentably distinct.

Furthermore, searching the inventions of groups (I, II) and (III, IV, V, VIII) together would impose a serious search burden. In the instant case, the search of the polypeptides and the polynucleotides are not coextensive. The inventions of groups (I, II) and (III, IV, V, VIII) have a separate status in the art as shown by their different classifications. Prior to the concomitant isolation and expression of the sequence of interest there may be journal articles devoted solely to polypeptides which would not have described the polynucleotide. Similarly, there may have been "classical" genetics papers which had no knowledge of the polypeptide but spoke to the gene. Therefore searching the nucleic acids and polypeptides, is not coextensive. The scope of nucleic acids as claimed extend beyond the polynucleotide that encodes the claimed polypeptides as explained above; furthermore, a search of the nucleic acid molecules of group (I, II) would require an oligonucleotide search, which is not likely to result in relevant art with respect to the polypeptides of group. As such, it would be burdensome to search the inventions of groups (I, II) and (III, IV, V, VIII) together. Additionally searching the literature regarding all viruses such as HIV and SIV together would be burdensome and it would require searching commercial and non-patent literature databases. Furthermore, searching all sequences of nucleic acids

together and all sequences of polypeptides, including gp120, gp41, and viral Env, as well as searching all deletions and mutations together would require using commercial databases and there is search burden also in the non-patent literature. Thus groups I, II, III, IV, V, and VIII are properly restricted based on being independent or distinct and having a burdensome search requirement.

The polynucleotide of group (I, II) and the antibody of group (XI, XII) are patentably distinct for the following reasons. The antibody of group (XI, XII) includes, for example, IgG molecules which comprise 2 heavy and 2 light chains containing constant and variable regions, and including framework regions which act as a scaffold for the 6 complementarity determining regions (CDRs). Polypeptides, such as the antibody of group (XI, XII) which are composed of amino acids, and polynucleotides, which are composed of nucleic acids, are structurally distinct molecules; any relationship between a polynucleotide and polypeptide is dependent upon the information provided by the nucleic acid sequence open reading frame as it corresponds to the primary amino acid sequence of the encoded polypeptide. In the present claims, a polynucleotide of group (I, II) will not encode an antibody of group (XI, XII), and the antibody of group (XI, XII) cannot be encoded by a polynucleotide of group (I, II). Therefore the antibody and polynucleotide are patentably distinct.

The antibody and polynucleotide inventions have a separate status in the art as shown by their different classifications. Furthermore, searching the inventions of group (I, II) and group (XI, XII) would impose a serious search burden since a search of the polynucleotide of group

(I, II) is would not be used to determine the patentability of an antibody of group (XI, XII), and vice-versa.

The polypeptide of group (III, IV, V, VIII) and the antibody of group (XI, XII) are patentably distinct for the following reasons: While the inventions of both group (III, IV, V, VIII) and group (XI, XII) are polypeptides, in this instance the polypeptide of group (III, IV, V, VIII) is a single chain molecule that functions as an enzyme, whereas the polypeptide of group (XI, XII) encompasses antibodies including IgG which comprises 2 heavy and 2 light chains containing constant and variable regions, and including framework regions which act as a scaffold for the 6 complementarity determining regions (CDRs) that function to bind an epitope. Thus the polypeptide of group (III, IV, V, VIII) and the antibody of group (XI, XII) are structurally distinct molecules; any relationship between a polypeptide of group (III, IV, V, VIII) and an antibody of group (XI, XII) is dependent upon the correlation between the scope of the polypeptides that the antibody binds and the scope of the antibodies that would be generated upon immunization with the polypeptide.

Furthermore, searching the inventions of group (III, IV, V, VIII) and group (XI, XII) would impose a serious search burden. The inventions have a separate status in the art as shown by their different classifications. A polypeptide and an antibody which production is induced as result of the immunization with the polypeptide require different searches. An amino acid sequence search of the full-length protein is necessary for a determination of novelty and unobviousness of the protein. However, such a search is not required to identify the antibodies of group (XI, XII). In addition, the technical literature searches for the polypeptide of group (III,

IV, V, VIII) and the antibody of group (XI, XII) are not coextensive, e.g., antibodies may be characterized in the technical literature prior to discovery of or sequence of their binding target.

The virus of group (VI, VII) and (the nucleic acid of group (I, II) the polypeptide of group (III, IV, V, VIII), and the antibody of group (XI, XII)) are patentably distinct inventions for the following reasons. In the instant case, the virus and the nucleic acid, the polypeptide, or the antibody do not overlap in scope because the virus, which is a microorganism, and a nucleic acid, the polypeptide, or the antibody are different products having different structures and different functions. The microorganism is a living entity and the nucleic acid, the polypeptide, or the antibody are isolated structures. The virus has a complex structure composed of nucleic or ribonucleic acids together with the structural proteins, whereas the nucleic acid alone is composed of purine and pirimidine units, the polypeptide and the antibody are composed of amino acids . In addition to the distinctiveness of the invention of group (VI, VII) and ((I, II), (III, IV, V, VIII), (XI, XII)) searching the inventions of group (VI, VII) and ((I, II), (III, IV, V, VIII), (XI, XII)) would impose a serious search burden. For example, the virus and the nucleic acid, the polypeptide, or the antibody have a separate status in the art as shown by their different classifications. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Inventions (IX, X), XIII, XIV, and XV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of

operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). The instant specification does not disclose that these methods would be used together. The method of method of producing a neutralizing antibody in a mammal, the method of producing a replication-competent mammalian immunodeficiency virus, a method of identifying a determinant of a chemokine receptor, and a method of identifying a compound that inhibits binding of a mammalian immunodeficiency virus gp120 polypeptide with a chemokine receptor are all unrelated as they comprise distinct steps and utilize different products which demonstrates that each method has a different mode of operation. Each invention performs this function using a structurally and functionally divergent material. Moreover, the methodology and materials necessary for producing a neutralizing antibody in a mammal differ significantly from the method of producing a replication-competent mammalian immunodeficiency virus or a method of identifying a determinant of a chemokine receptor each of the materials. Therefore, each method is divergent in materials and steps. For these reasons the inventions (IX, X), XIII, XIV, and XV are patentably distinct. Furthermore, the distinct steps and products require separate and distinct searches. The inventions of groups (IX, X), XIII, XIV, and XV have a separate status in the art as shown by their different classifications. As such, it would be burdensome to search all inventions together.

Inventions (III, IV, V, VIII) and (XIII, XIV, XV) are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the polypeptide of group (III, IV, V,

VIII) can be used to immunize an animal to produce an antibody, as opposed to being used as a method of producing a replication-competent mammalian immunodeficiency virus, a method of identifying a determinant of a chemokine receptor that specifically binds with a gp120 polypeptide of a mammalian immunodeficiency virus or a method of identifying a compound that inhibits binding of a mammalian immunodeficiency virus gp120 polypeptide with a chemokine receptor. Further, the polypeptide present in the sample is not encompassed within group (III, IV, V, VIII) because as claimed, the polypeptide has been isolated.

Inventions (III, IV, V, VIII) and (IX, X) are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the polypeptide can be used to catalyze an enzymatic reaction as opposed to its use in a method of producing a neutralizing antibody in a mammal. Searching the inventions of groups (III, IV, V, VIII) and (IX, X) together would impose serious search burden. The inventions of Groups II and IV have a separate status in the art as shown by their different classifications. Moreover, in the instant case, the search for the polypeptides and the method of producing a neutralizing antibody in a mammal are not coextensive. Moreover, even if the polypeptide product were known, the method of producing a neutralizing antibody in a mammal which uses the product may be novel and unobvious in view of the preamble or active steps.

Inventions (I, II, VI, VII, XI, XII) and (IX, X, XIII, XIV, XV) are unrelated because the product of group (XI, XII) is not used or otherwise involved in the process of groups (IX, X,

XIII, XIV, XV). In the instant case, the different inventions, the virus of group (VI, VII) and the antibody of group (XI, XII) are not disclosed as being used in the methods of producing a neutralizing antibody in a mammal, the method of producing a replication-competent mammalian immunodeficiency virus, a method of identifying a determinant of a chemokine receptor, and a method of identifying a compound that inhibits binding of a mammalian immunodeficiency virus gp120 polypeptide with a chemokine receptor.

The different inventions have different modes of operation such as the gene therapy mode of operation of group (I, II), which is different from the use of the polypeptides in the methods of groups (IX, X, XIII, XIV, XV).

4. Because these inventions are distinct for the reasons given above, have acquired a separate status in the art as shown by their different classification, and the search required for each group is not required for the other groups because each group requires a different non-patent literature search due to each group comprising different products and/or method steps, restriction for examination purposes as indicated is proper. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

5. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP §

821.04. **Process claims that depend from or otherwise include all the limitations of the patentable product** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103, and 112. Until an elected product claim is found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowed product claim will not be rejoined. See "Guidance on Treatment of Product and Process Claims in light of In re Ochiai, In re Brouwer and 35 U.S.C. § 103(b)," 1184 O.G. 86 (March 26, 1996). Additionally, in order to retain the right to rejoinder in accordance with the above policy, Applicant is advised that the process claims should be amended during prosecution either to maintain dependency on the product claims or to otherwise include the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the

currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agnieszka Boesen, Ph.D. whose telephone number is 571-272-8035. The examiner can normally be reached on M – F (9:00AM – 5:30PM). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on 571-272-0902. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

Agnieszka Boesen, Ph.D.

March 31, 2006

Stacy B. Chen 4/3/06

Stacy B. Chen
Patent Examiner
Art Unit 1648